

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 09-080532

(43)Date of publication of application : **28.03.1997**

(51)Int.Cl.

G03B 5/00
G03B 17/00

(21)Application number : 07-233770

(71)Applicant : NIKON CORP

(22)Date of filing : 12.09.1995

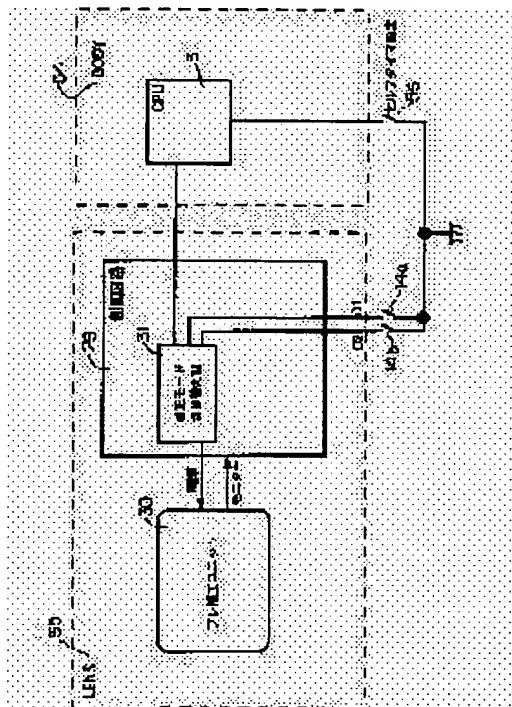
(72)Inventor : TAGUCHI FUMIYA
AMANUMA TATSUO
HIRANO SHINICHI

(54) IMAGE BLURRING CORRECTION CAMERA

(57)Abstract:

PROBLEM TO BE SOLVED: To reduce power consumption by extremely restricting shake correction when the necessity of the shake correction is not so much excepting in the midst of exposure.

SOLUTION: This camera is provided with a shake detection part detecting shake acting on the camera, a shake correction mechanism part (shake correction unit) 30 for changing the optical axis of a photographing optical system in order to correct image blurring caused by the shake, a control part (control circuit) 29 for controlling the shake correction mechanism part based on an output signal from the shake detection part, and a self-timer setting part 56 for setting the self-timer mode of the camera. In the case the setting part 56 is set to the self-timer mode, the driving of the mechanism part 30 excepting in the midst of exposure is restricted or controlled so as not to be performed by the control part 29.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of

rejection]

[Kind of final disposal of application other than
the examiner's decision of rejection or
application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the image Bure amendment camera which can amend image Bure generated by blurring etc. in a camera.

[0002]

[Description of the Prior Art] The image Bure amendment camera which can amend image Bure is known by carrying out an angular-velocity sensor etc. detecting Bure who arose to the camera, and moving photography optical system to the sense contrary to the detected direction of Bure etc., and changing the optical axis of photography optical system (JP,2-183217,A etc.). Drawing 5 is the block diagram showing an example of the Bure amendment circuit of the conventional image Bure amendment camera. The camera consists of the camera bodies 54 and taking lenses 55 which were connected electrically. The converter (DC/DC) 2 and the CPU3 grade are prepared in the camera body 54. On the other hand, in the taking lens 55, the converter (DC/DC) 16, CPU12, and the CPU17 grade are prepared.

[0003] It is loaded with the cell 1 into the camera body 54, and it supplies electric power to the inside of a camera body 54, and a taking lens 55. The camera body 54 and the taking lens 55 are electrically connected by electric contact 6, 7, 8, 9, and 10. Electric contact 6 is a contact for supplying electric power to a taking lens 55 through the electric supply control switch 4 which is a solid state switch from a cell 1. Electric contact 7 is a contact for supplying electric power to a taking lens 55 in the output of a converter 2. Electric contact 8 is a contact group for performing the communication link between CPU3 and a master CPU 12. Electric contact 9 is GND (gland) Rhine connected with the cathode terminal of a cell 1. Electric contact 10 is GND Rhine grounded by the hardware of a camera body 54.

[0004] Switches 5a and 5b are switches of the release carbon button of a camera switch on by the 1st stroke and the 2nd stroke, respectively. L level will be inputted into the terminal HAN of CPU3 if switch 5a carries out ON. ON of switch 5b inputs L level into the terminal RLS of CPU3.

[0005] CPU3 carries out main control in a camera body 54. By inputting L level into the terminal HAN, CPU3 carries out starting control of the converter 2, and supplies electric power to masters CPU12 and EEPROM13 (electrically rewritable nonvolatile memory) through electric contact 7. Moreover, a master CPU 12 outputs the electric supply demand signal of electric contact 6 to CPU3 through electric contact 8. CPU3 supplies electric power to a converter 16 through electric contact 6 from the electric supply control switch 4 from a cell 1.

[0006] If electric power is supplied from electric contact 7, a master CPU 12 will start a converter 16. A converter 16 supplies electric power to the control circuit of the constant-voltage regulator circuit 18, a slave CPU 17, and Motor Driver 20 and 23. The constant-voltage regulator circuit 18 supplies electric power to the Bure detector and the analog processing circuit 19. In the case of the analog processing circuit 19, in order to take the large dynamic range of a signal component, the power source of the processing circuit of the level of a noise must also be low. Here, if the output of a converter 16 is used directly, the level of a noise is not sufficiently low level on the property that this power source is

switching power supply. Therefore, the power source is supplied to the circuit which performs analog processing through the constant-voltage regulator circuit 18.

[0007] Switches 14a and 14b are 2-bit configuration switches, and are for choosing the image Bure amendment control mode. L level is inputted into the terminal D1 of a master CPU 12 when switch 14a is ON. L level is inputted into the terminal D2 of a master CPU 12 when switch 14b is ON.

[0008] Drawing 6 shows the relation in the setup and amendment mode of Switches 14a (terminal D1) and 14b (terminal D2). Switch 14a is set as the mode in which they perform amendment actuation only during exposure when L level (ON) and switch 14b are H level (OFF). Moreover, switch 14a is set as the mode in which they perform amendment (under exposure is included) actuation also to except during exposure when H level and switch 14b are L level. It is set as the mode in which, as for the time of H level, Switches 14a and 14b do not perform amendment actuation further again.

[0009] Analog processing is carried out and the amount of Bure detected in the analog processing circuit 19 is inputted into a master CPU 12. When image Bure amendment mode is set as the mode in which amendment actuation is performed also to except during exposure and switch 5a is turned on (when only switch 14b is ON), a master CPU 12 calculates the amount which should drive motors 21 and 24 based on the data by which analog processing was carried out, and transmits it to a slave CPU 17. A slave CPU 17 outputs the amount which should be driven to Motor Driver 20 and 23, and drives motors 21 and 24.

[0010] Motors 21 and 24 change rotation into rectilinear motion by a gear etc. (not shown), and drive amendment optical system (not shown). The location detectors 22 and 25 have detected the location of the amendment optical system by rotation of motors 21 and 24. The location detectors 22 and 25 get to know deflection with the controlled variable by the feedback pulse from for example, a photo interrupter component etc.

[0011] Moreover, when image Bure amendment mode is set as the mode in which amendment actuation is performed only during exposure and switch 5b is turned on (when only switch 14a is ON), amendment optical system is driven only during exposure. The master CPU 12 is acting as the monitor of the electrical potential difference of electric contact 6 (terminal AN2). When this electrical-potential-difference value is less than a predetermined value, warning is emitted or a halt of control etc. is performed. In addition, resistance 11 is the low resistance prepared so that the potential difference with electric contact 10 might not become large, when motors 21 and 24 rotate and a high current flows into electric contact 9.

[0012]

[Problem(s) to be Solved by the Invention] However, the following technical problems occurred with the above-mentioned conventional image Bure amendment camera. By making it the mode in which Bure amendment is performed also to except during exposure, when a field is observed from a finder for example, in the state of photography standby, the image Bure amendment effectiveness can be checked. Power consumption will become large, if it continues to except during exposure and Bure amendment is performed on the other hand. Here, there may be little need of observing a field from a finder at the time of except during exposure. Therefore, it becomes useless [power] to perform Bure amendment uniformly in such a case, and it has the problem of shortening the life of a cell.

[0013] When the technical problem of this invention has little need of performing Bure amendment during exposure in except, it is in a limit etc. carrying out Bure amendment as much as possible, and lessening power consumption.

[0014]

[Means for Solving the Problem] In order to solve an above-mentioned technical problem, invention of claim 1 In order to amend the Bure detecting element which detects Bure who acts on a camera, and image Bure by said Bure The Bure amendment device section to which the optical axis of photography optical system is changed, and the control section which controls said Bure amendment device section based on the output signal of said Bure detecting element, It has the self-timer setting section which sets up the self-timer mode of a camera. Said control section When said self-timer setting section is set as said self-timer mode, it is characterized by controlling to restrict the drive of said Bure amendment

device section of an except, or not to drive it during exposure.

[0015] In order that invention of claim 2 may amend the Bure detecting element which detects Bure who acts on a camera, and image Bure by said Bure The Bure amendment device section to which the optical axis of photography optical system is changed, and the control section which controls said Bure amendment device section based on the output signal of said Bure detecting element, The self-timer setting section which sets up the self-timer mode of a camera, It has the mode change section which has the 1st mode in which said Bure amendment device section is not driven, and the 2nd mode in which the drive of said Bure amendment device section is performed. Said control section When said self-timer setting section is set as said self-timer mode and said mode change section is set as said 2nd mode, it is characterized by controlling to restrict the drive of said Bure amendment device section of an except, or not to drive it during exposure.

[0016] In order that invention of claim 3 may amend the Bure detecting element which detects Bure who acts on a camera, and image Bure by said Bure The Bure amendment device section to which the optical axis of photography optical system is changed, and the control section which controls said Bure amendment device section based on the output signal of said Bure detecting element, The self-timer setting section which sets up the self-timer mode of a camera, It has the mode change section which has the 1st mode performed only while exposing the drive of said Bure amendment device section, and the 2nd mode in which the drive of said Bure amendment device section is performed irrespective of exposure. When said self-timer setting section is set as said self-timer mode and said mode change section is set as said 2nd mode, said control section It is characterized by controlling to restrict the drive of said Bure amendment device section of an except, or not to drive it during exposure.

[0017] In order that invention of claim 4 may amend the Bure detecting element which detects Bure who acts on a camera, and image Bure by said Bure The Bure amendment device section to which the optical axis of photography optical system is changed, and the control section which controls said Bure amendment device section based on the output signal of said Bure detecting element, The self-timer setting section which sets up the self-timer mode of a camera, It has the mode change section which has the 1st mode performed only while exposing the drive of said Bure amendment device section, and the 2nd mode in which the drive of said Bure amendment device section is performed to except during exposure. Said control section When said self-timer setting section is set as said self-timer mode and said mode change section is set as said 2nd mode, it is characterized by controlling to restrict the drive of said Bure amendment device section of an except, or not to drive it during exposure. *

[0018]

[Embodiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained with reference to a drawing etc. Drawing 1 is the block diagram showing 1 operation gestalt of the Bure amendment circuit of the image Bure amendment camera by this invention, and corresponds to drawing 5 of the conventional example. Moreover, in this invention, the hard configuration is the same as that of the conventional thing. In drawing 1, the following points differ from the Bure amendment circuit of drawing 4. The switch 56 is formed in this circuit at the camera body 54 side. A switch 56 is a switch for setting up self-timer photography of a camera. ON of a switch 56 inputs L level into the terminal SELF of CPU3. In this condition, ON of switch 5b performs self-timer photography. About other points, it is the same as that of the thing of drawing 4.

[0019] Drawing 2 is the block diagram showing the Bure amendment circuit of drawing 1 for every block. In drawing 2, the above-mentioned switch 56 is formed in the camera body 54 side, and the switches 14a and 14b which choose the image Bure amendment control mode are formed in the taking-lens 55 side. The control circuit 29 by the side of a taking lens 55 carries out drive control of the Bure amendment unit 30 which has amendment optical system based on the command from CPU3 in the condition of each switches 14a, 14b, and 56, and a list.

[0020] Drawing 3 is the block diagram showing in what kind of logic the Bure amendment unit 30 is driven. Moreover, drawing 4 shows the logical-value table corresponding to drawing 3. Here, the part into which this invention differs from the conventional example is the 6th (bottom) step of part in the logical table of drawing 4. That is, switch 14a is H level (OFF), and when switch 14b is L level (ON), it

is a time of self-timer photography being set up (when a switch 56 is ON). If it is original at this time, except will carry out the Bure amendment actuation during exposure. However, when a self-timer is set up, generally, a camera is installed in a tripod, or is put on a suitable base, and the photography person is not observing the field from a finder. Therefore, there is no utility which performs Bure amendment to except during exposure at the time of self-timer photography. Then, it controls in this case to perform the Bure amendment actuation only during exposure.

[0021] Although the above operation gestalt showed the example from which amendment mode changes like drawing 6 with Switches 14a and 14b, only during exposure, the mode in which the Bure amendment actuation is performed, and the mode in which the Bure amendment actuation is performed to except during exposure may be formed, and you may set up the mode performed in the Bure amendment actuation to except during exposure and exposure by carrying out both sides to ON. Moreover, the mode in which Bure amendment is performed, and the mode in which Bure amendment is not performed are only formed, and when are set as the mode in which Bure amendment is performed and self-timer photography is set up, you may control to perform Bure amendment only during exposure. Furthermore, when the power source was switched on and self-timer photography is set up in the case of the camera which continues and performs Bure amendment until a power source is turned off, you may control to perform Bure amendment only during exposure. Although it controlled not to perform the Bure amendment actuation of an except during exposure when self-timer photography was set up, it may not control by the above operation gestalt not to carry out completely, but you may control by it further again to restrict the Bure amendment actuation.

[0022] As mentioned above, although 1 operation gestalt of this invention was explained, the following various deformation is possible for this invention within equal limits, without being limited to the operation gestalt mentioned above. For example, with this operation gestalt, although it transmits that self-timer photography was set up to a taking lens 55 from a camera body 54 and was made to judge amendment mode by the taking-lens 55 side, the information on amendment mode is transmitted to a camera body 54 side from a taking-lens 55 side, and even if it judges amendment mode with the control unit in a camera body 54, the same effectiveness is acquired.

[0023]

[Effect of the Invention] Since according to this invention it was made not to perform image Bure amendment actuation when self-timer photography was set up by the simple configuration, consumption of the power when not observing a field from a finder can be lessened, and the life of a cell can be lengthened. Moreover, a setting error can be prevented while the mode setting of the Bure amendment by manual operation of a photography person is avoidable, since it changes to the mode in which image Bure amendment is automatically performed only during exposure when according to invention of claims 3 and 4 being set up so that image Bure amendment actuation may be performed also to except during exposure, and self-timer photography is set up.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing 1 operation gestalt of the Bure amendment circuit of the image Bure amendment camera by this invention.

[Drawing 2] It is the block diagram showing the Bure amendment circuit of drawing 1 for every block.

[Drawing 3] It is the block diagram showing in what kind of logic the Bure amendment unit 30 is driven.

[Drawing 4] The logical-value table corresponding to drawing 3 is shown. .

[Drawing 5] It is the block diagram showing an example of the Bure amendment circuit of the conventional image Bure amendment camera.

[Drawing 6] The relation in in the setup and amendment mode of Switches 14a (terminal D1) and 14b (terminal D2) is shown.

[Description of Notations]

1 Cell

2 Converter

3 CPU

4 Electric Supply Control Switch

5a, 5b Switch

6, 7, 8, 9, 10 Electric contact

11 Resistance

12 Master CPU

13 EEPROM

14a, 14b Switch

16 Converter

17 Slave CPU

18 Constant-Voltage Regulator Circuit

19 Analog Processing Circuit

20 23 Motor Driver

21 24 Motor

22 25 Location detector

54 Camera Body

55 Taking Lens

56 Switch

[Translation done.]

* NOTICES *

JPO and NCIPI are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DRAWINGS

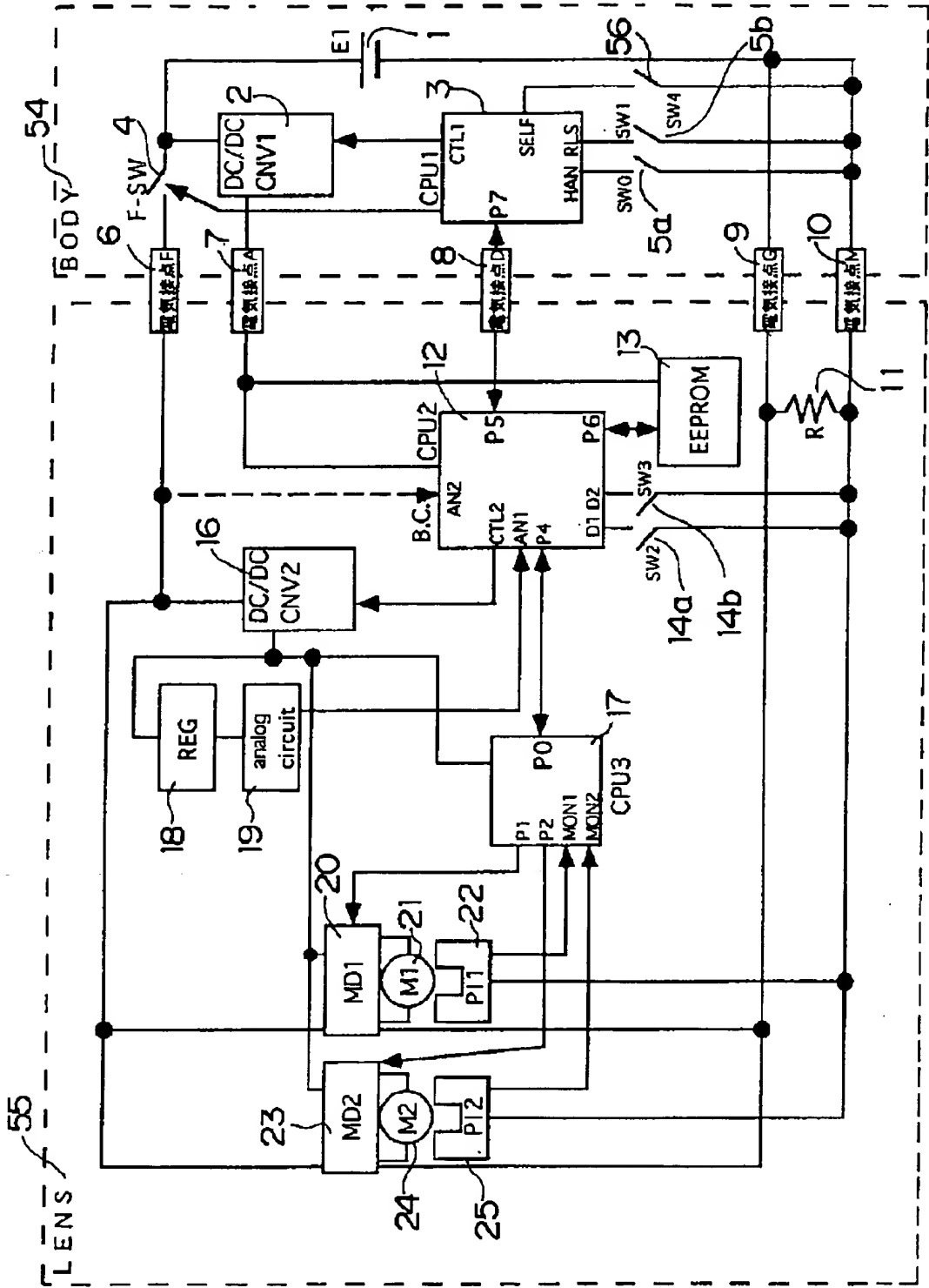
[Drawing 4]

| | D 2 | D 1 | セルフ設定 | IN1 | IN2 |
|--------|-----|-----|-------|-----|-----|
| フレ補正せず | H | H | H | H | H |
| フレ補正せず | H | H | L | H | H |
| 露光中補正 | H | L | H | L | H |
| 露光中補正 | H | L | L | L | H |
| 露光外補正 | L | H | H | H | L |
| 露光外補正 | L | H | L | L | H |

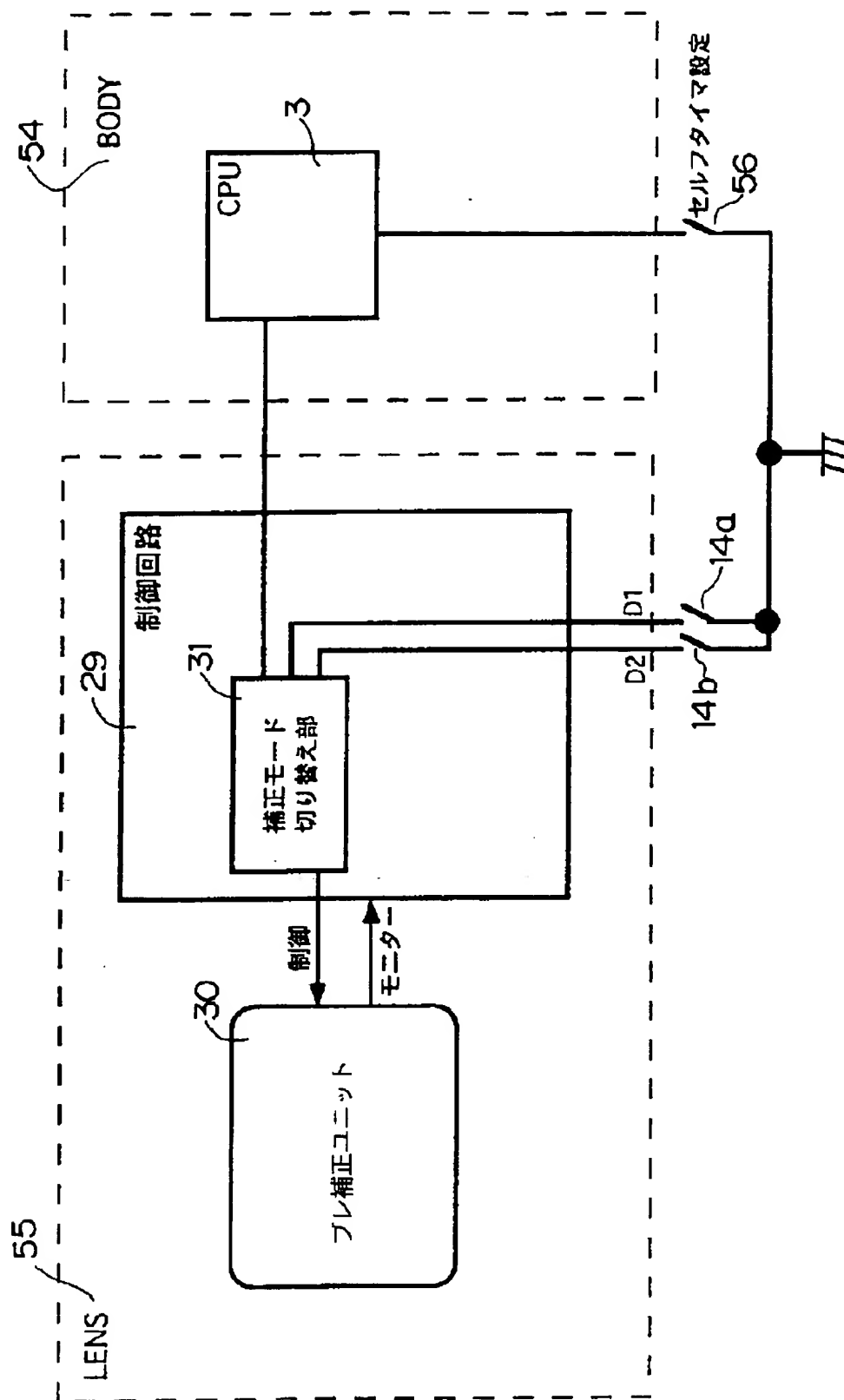
[Drawing 6]

| D 1 | D 2 | 補正モード |
|-----|-----|-------------------|
| L | H | 露光中のみ補正動作を行うモード |
| H | L | 露光中以外にも補正動作を行うモード |
| H | H | 補正動作を一切行わないモード |

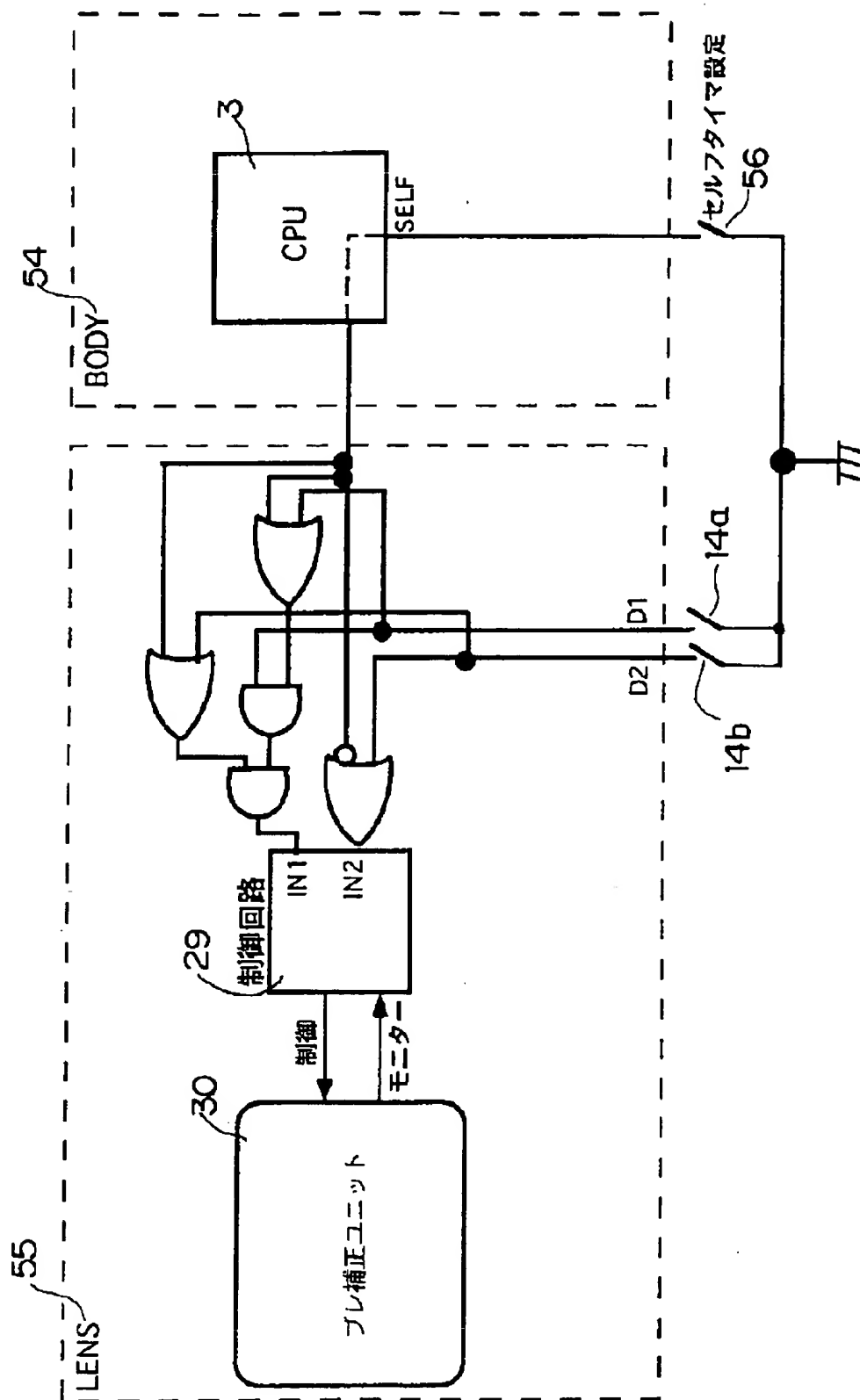
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Drawing 5]



[Translation done.]